

What we claim is:

1. A multi-layer sensor through which an optical wave guide (18, 42, 60) is passed, the optical wave guide (18, 42, 60) being arranged so that in the event of the external application of force the force acts on the optical wave guide (18, 42, 60).
2. A multi-layer sensor according to claim 1, wherein the optical wave guide (18, 42, 60) is arranged such that it is bent by the external application of force.
3. A multi-layer sensor according to claim 1, wherein the optical wave guide (18, 42, 60) is arranged such that it is deformed by the external application of force.
4. A multi-layer sensor according to claim 1 having a structure (52, 82, 104) in which the optical wave guide (18, 42, 60) is contained, the structure (52, 82, 104) consisting of a front layer (54, 84, 106) and a rear layer (56, 86) which transmit the external application of force directly on to the optical wave guide (18, 42, 60).
5. A multi-layer sensor according to claim 4, wherein the structure comprises clips (34, 102) and ribs (38, 62, 88) which serve to guide the optical wave guide (18, 42, 60).
6. A multi-layer sensor according to claim 5, wherein the front and rear layers (54, 56, 84, 86, 106) are joined together by means of an adhesive layer (70, 108).
7. A multi-layer sensor according to claim 6, wherein the adhesive layer (70, 108) is applied only in the region of the edges of the front and rear layers (54, 56, 84, 86, 106).
8. A multi-layer sensor according to claim 1, having a first layer (12) through

which an optical wave guide (18, 42, 60) is passed and a second layer (14, 32) which abuts on the first layer (12), the first layer (12) having greater compressibility than the second layer (14, 32).

9. A multi-layer sensor according to claim 8, wherein a third layer (16, 30, 40) is provided which has lower compressibility than the first layer (12) and which is arranged such that the first layer (12) is disposed between the second layer (14, 32) and the third layer (16, 30, 40).

10. A multi-layer sensor according to claim 9, wherein the optical wave guide (18, 42, 60) is passed through the sensor (10, 50, 80, 100) at least twice.

11. A multi-layer sensor according to claim 10, wherein the optical wave guide (18, 42, 60) is passed through the sensor in a wave-like configuration.